

Additional records of the Carpentarian Rock-rat *Zyomys palatalis* at Redbank, close to the type locality

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Despite extensive survey effort in the Gulf region (Menkhorst & Woinarski 1992, Trainor 1996, Churchill 1996, Puckey unpubl. data) the Carpentarian Rock-rat *Zyomys palatalis* is known from only four locations, all on Wollogorang Station (Moonlight Gorge, Banyan Gorge, Camel Creek Gorge and McDermott's Springs). All four locations are within a 37 km radius and the closest of the four sites are 17 km apart. Habitat at all locations is typified by monsoon forest vegetation on scree slopes within sandstone gorges and associated with permanent water. Due to the low population size of *Z. palatalis*, the limited availability of suitable habitat, and the vulnerability of preferred habitat to damage by fire, the species is listed as critically endangered, and specified in the list of threatened species referred to in section 178 of the *Environment Protection and Biodiversity Conservation Act 2000*. In the Northern Territory the Carpentarian Rock-rat *Zyomys palatalis* is defined as Threatened under section 30 of the *Territory Parks and Wildlife Conservation Act 2000*.

In 2001 I received photos and hair samples from the caretaker of Redbank Mine (17°11'S 137°46'E) indicating that Carpentarian Rock-rats occurred in the scree slopes adjacent to the mine camp. In February 2002 (late wet season) the Redbank Camp site was trapped for two consecutive nights. A total of seven *Z. palatalis* individuals (4 males and 3 females) were recorded from only 180 trap nights. Two of the females were heavily pregnant.

The habitat at Redbank Camp includes a patch of monsoon forest within a small sandstone gorge with a permanent spring. On either side are open woodland, scree slopes and rock walls. The area of monsoon rainforest is less than 1 ha in size and is dominated by *Syzygium angophoroides* with a canopy height of up to 12 m and canopy cover of 50-70%. Many of the plants present in the rainforest patch are common with the type location (Banyan Gorge) and include *S. angophoroides*, *Exocarpos latifolius*, *Celtis philippensis*, *Antidesma parvifolium*, *Flueggea virosa*, *Ficus opposita*, *F. virens*, *Timonius timon*, *Alphitonia excelsa* and *Passiflora foetida*. The surrounding savanna woodland is dominated by *Eucalyptus brevifolia*, with *Erythrophloeum chlorostachys*, *Owenia vernicosa*, *Terminalia carpentariae*, *Grewia retusifolia* and an understorey of *Triodia* spp. Some trees, shrubs and vines were

fruiting at the time of trapping including *F. virosa*, *A. parvifolium*, *T. carpentariae*, *Ficus* spp., *P. foetida*, *S. angophoroides* and *T. timon*. The site has substantial scree slopes as well as rock walls with caves and fissures, similar to the type location.

The level of human impact on the Redbank site is considerable. Due to its proximity to the residential area, it is burnt annually with hot fires to reduce fuel loads and to protect infrastructure (Tony Inwood, Redbank Mine, pers. comm.). Although these fires do not appear to penetrate far into the gorge proper, they do burn the surrounding scree slopes where most of the rats were caught during this survey. Movement of people, equipment and vehicles in the area has facilitated the spread of non-native plants (*Mangifera* sp., *Hyptis suaveolens* and other garden plants) onto the scree slopes and up to the gorge entrance, and has facilitated the aggressive spread of *Passiflora foetida*. Rainforest patch sizes across the Gulf region have been found to be vulnerable to continued disturbance from introduced weeds and intense late-dry season fires (Russell-Smith and Bowman 1992). Begg *et al.* (1981) showed a decrease in the numbers and fecundity of another species of large rock-rat, *Z. maini*, after fire. The rats at Redbank have been observed foraging in and around the human residences (T. Inwood pers. comm.) where they may be supplementing their diet with non-conventional foods, especially when fire has disturbed their natural food source.

The Redbank site is 7 km from the nearest known population of the species (Banyan Gorge). This raises the question of whether individuals move between the populations or whether populations exist as isolated units. Recent radio-tracking studies indicate that the rats are capable of travelling approximately 2 km from their point of capture in just one night and that this travel is not restricted to habitat within the gorge environment (Helen Puckey unpubl. data, 2001-2). Therefore it is not unreasonable to expect that the rats may indeed be moving between Redbank and Banyan Gorge.

The Redbank site had been previously trapped in the dry season of 1993 (Churchill 1996). No *Z. palatalis* were recorded during the earlier study despite a much greater trapping intensity (432 trap nights). Trainor (1996) found that capture rates of *Z. palatalis* were strongly seasonal with significantly fewer captures in the early dry season (July – August). This highlights the need for trapping in both wet and dry seasons. It also raises the question of whether *Z. palatalis* populations are susceptible to decadal-scale changes in climate, similar to the Central Rock-rat *Z. pedunculatus* which is now showing a much greater distributional range after a series of good rainfall years (Glenn Edwards, Parks and Wildlife Service NT, pers. comm.). Mean annual rainfall recorded at Wollogorang was 41% less in the 5 years leading up to the 1993 survey, than for the 5 years prior to the current survey at the same site (data from Bureau of Meteorology). Surveys of other gorges in the immediate area would provide good comparisons with baseline surveys carried out in 1993-1995 and help to clarify the current distribution of the species.

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